REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 3 has been amended to place claim 3 in independent form. Applicant respectfully submits that this amendment does not raise a new issue that would require further consideration and/or search. Applicant respectfully requests entry of this amendment.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-17, 19, and 20 are now pending in this application.

Rejections under 35 U.S.C. § 103

Claims 1-6 and 9-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,562,507 to Cisar *et al.* (hereafter "Cisar"). This rejection is respectfully traversed.

Cisar discloses a barrier and flow control device for electrochemical reactors that includes a flow field 102, a thin porous gas diffusion layer 104 sintered to the flow field 102, a membrane 106, and electrodes 108, 109. See col. 9, lines 1-13, 37-47, and Figures 13 and 15 of Cisar. Cisar discloses that flow field can have a structure of metal foam, metal grids, sintered metal particles, sintered metal fibers, and combinations thereof. See claim 2 of Cisar.

However, as noted on page 3 of the Office Action, Cisar does not disclose or suggest that a stack comprising an impermeable metal structure, at least one first metal fiber layer, and at least one second metal fiber layer, wherein a planar air permeability of said stack is

more than 0.02 l/min*cm, wherein a porosity of said second metal fiber layer is less than 80%, as recited in claims 1 and 3.

The Office argues on pages 3-4 of the Office Action that it would have been obvious to adjust the planar air permeability of the flow field of Cisar and to adjust the porosity of a second metal fiber layer of the flow field of Cisar because these are art recognized result effective variables. Applicant respectfully disagrees.

The Office notes on page 3 of the Office Action that Cisar discusses flow field testing in col. 8, lines 24-38, in which various air flow rates and pressures were used to provide different pressure drops at constant flow. However, this only demonstrates that air flow rates and pressures affect pressure drop, not that planar air permeability and porosity of a second metal fiber layer are result effective variables. The Office argues on page 3 of the Office Action that the tests disclosed by Cisar help to determine variation in permeability and porosity of a flow field but does not provide any evidence in the prior art to support this statement. In particular, the Office does not explain how pressure drop measurements for an entire flow field can provide information about the porosity of a particular layer within the flow field, such as the porosity of a second metal fiber layer. There is no evidence that the relationship between air flow rates, air flow pressures, and the pressure drop of a flow field is also related to planar air permeability and porosity of a second metal fiber layer and that these latter features are result effective variables.

The Office further argues on pages 3-4 of the Office Action that because Cisar teaches on col. 8, lines 39-45, controlling the size distribution of metal spheres and controlling sintering conditions to control porosity of a sintered metal sphere layer that the porosity of a second metal fiber layer is a result effective variable. However, this only demonstrates that size distribution and sintering conditions are result effective variables in that these variables affect the porosity of a sintered metal sphere structure, not that porosity itself is a result effective variable. Cisar provides no disclosure or suggestion that varying planar air permeability or porosity affects the result of another feature.

Furthermore, although Cisar discloses the use of a sintered metal fiber structure in claim 2, Cisar provides no teachings as to how the metal fiber structure can be used or varied in its structure or features. Cisar discusses metal spheres in col. 8, lines 39-45, not metal fibers. As demonstrated in the attached Exhibit A, a fiber structure (a) has a substantially different structure than structure made from spheres (b). As shown in the attached Exhibit A, the constituent fibers and spheres of these two different structure have substantially different shapes, which in turn affects the contact area and porosity within the structure. For instance, while the porosity of a sintered sphere layer can be controlled by the size distribution of the spheres and sintering conditions, the porosity of a fiber layer can be controlled by other features, such as the length to diameter ratio of the fibers.

Thus, the teachings of Cisar do not form a basis that the planar air permeability and the porosity of a second metal fiber layer, as recited in claims 1 and 3, are result-effective variables that can be optimized.

The Office also argues on page 3 of the Office Action that it would have been obvious to adjust the planar air permeability of the flow field and the porosity of a second metal fiber layer to adjust reactants going to a plate to beneficially improve the electric contact areas of the cell. However, as noted by the Office on page 3 of the Office Action, Cisar provides no planar air permeability or porosity values to modify, not does Cisar disclose or suggest that modifying the planar air permeability or porosity of a second metal fiber layer affects the electric contact areas of a cell, as argued by the Office.

For at least the reasons discussed above, Cisar does not disclose or suggest all of the features of claims 1 and 3, and it would not have been obvious to modify the flow field of Cisar to provide the stacks of claims 1 and 3.

Claim 3 is allowable over Cisar for at least the reasons discussed above. Claim 3 further recites "said first metal fiber layer having a porosity of more than 80%." The Office argues on pages 4-5 of the Office Action that Cisar discloses a nickel foam with a density of 5% and a nominal pore spacing of 80 pores per linear inch. However, a nickel foam is not a

metal fiber layer. Furthermore, Cisar does not disclose or suggest that porosity of a first or a second metal fiber layer is a result effective variable, as discussed above. Additionally, Applicant believes that a structure of sintered sphere could not attain a porosity of more than 80%, as recited in claim 3, due to the shape and nature of spherical particles. Therefore, it would not have been obvious to modify the device of Cisar to provide the stack of claim 3 because Cisar fails to disclose or suggest all of the features of claim 3.

Reconsideration and withdrawal of this rejection is respectfully requested for at least the reasons discussed above.

Claims 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cisar as applied to claim 1 and further in view of U.S. Patent No. 6,022,634 to Ramunni *et al.* (hereafter "Ramunni"). This rejection is respectfully traversed. Rumunni fails to remedy the deficiencies of Cisar discussed above in regard to independent claim 1, from which claims 7 and 8 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cisar as applied to claim 1 and further in view of U.S. Patent No. 6,605,381 to Rosenmayer (hereafter "Rosenmayer"). This rejection is respectfully traversed. Rosenmayer fails to remedy the deficiencies of Cisar discussed above in regard to independent claim 1, from which claims 19 and 20 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Conclusion

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date JAN - 2 2009

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